

## **ABSTRACT**

A model train operating, sound and control system that provides a user with increased operating realism. A novel remote control communication capability between the user and the model trains. This feature is accomplished by using a handheld remote control on which various commands may be entered, and a Track Interface Unit that retrieves and processes the commands. The Track Interface Unit converts the commands to modulated signals in the form of data bit sequences (preferably spread spectrum signals) which are sent down the track rails. The model train picks up the modulated signals, retrieves the entered command, and executes it through use of a processor and associated control and driver circuitry. A speed control circuit located inside the model train that is capable of continuously monitoring the operating speed of the train and making adjustments to a motor drive circuit, as well as a novel smoke unit. Circuitry for connecting the Track Interface Unit to an external source, such as a computer, CD player, or other sound source, and have real-time sounds stream down the model train tracks for playing through the speakers located in the model train.